

## WHAT IS CLAIMED IS:

1. A halogen-free ignition resistant polymer composition comprising:

A) a thermoplastic polymer or polymer blend, and

B) a modified multi-functional epoxy resin containing from 0-20 wt. percent residual epoxy groups, based on the total weight of the epoxy resin, and

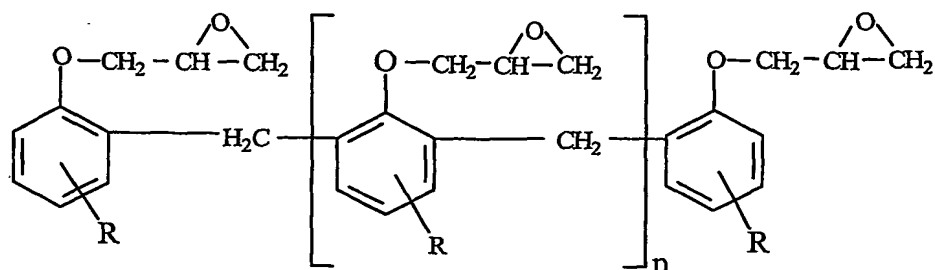
C) a phosphorus containing compound.

2. The halogen-free ignition resistant polymer composition of Claim 1, wherein A) is selected from the group consisting of: polymers produced from a vinyl aromatic monomer or hydrogenated versions thereof, polycarbonate, acrylonitrile-butadiene-styrene copolymer/polycarbonate compositions, hydroxy phenoxy ether polymers, polyphenylene ether polymers, polyethylene terephthalate, epoxy resins, ethylene vinyl alcohol copolymers, ethylene acrylic acid copolymers, polyolefin carbon monoxide interpolymers, polyolefins, cyclic olefin copolymers, olefin copolymers and homopolymers, polyphenylene oxide and any combination thereof.

3. The halogen-free ignition resistant polymer composition of Claim 2, wherein A) is selected from the group consisting of: styrene-butadiene block copolymers, polystyrene, high impact polystyrene, acrylonitrile-butadiene-styrene copolymers, and styrene-acrylonitrile copolymers.

4. The halogen-free ignition resistant polymer composition of Claim 1, wherein A) is from 40 to 94 weight percent; B) is from 1 to 30 weight percent; and C) is from 5 to 30 weight percent of the total weight of the halogen-free ignition resistant polymer composition

5. The halogen-free ignition resistant polymer composition of Claim 1 wherein B) is a modified multi-functional epoxy resin derived from a multi-functional epoxy resin selected from the following structures:



wherein "R" is hydrogen, C<sub>1</sub>-C<sub>3</sub> alkylhydroxy or a C<sub>1</sub>-C<sub>3</sub> alkyl, for example, methyl; and "n" is 0 or an integer from 1 to 10. "n" preferably has an average value of from 0 to 5;

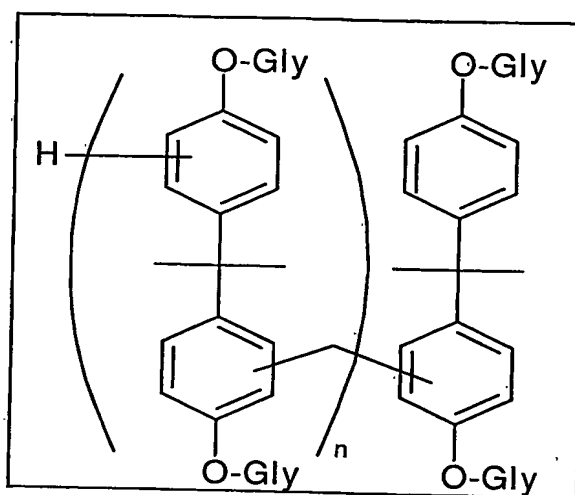


Fig.1 BPAN-epoxy

5

Wherein Gly is a glycidyl group; and

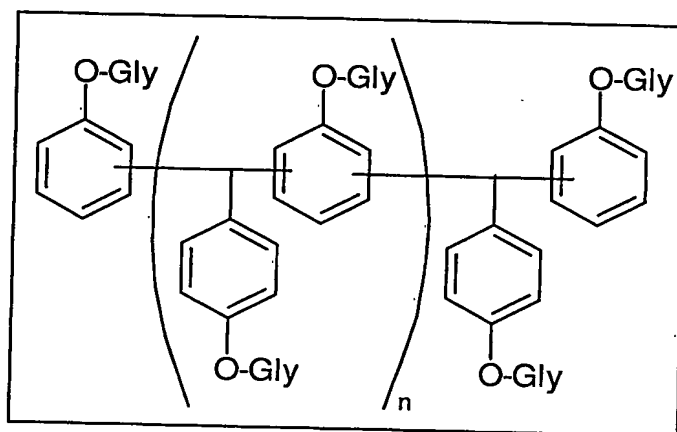


Fig.2 tris phenol type epoxy

6. The halogen-free ignition resistant polymer composition of Claim 1 wherein the modified multi-functional epoxy resin is a material produced from an epoxy resin which possesses, on average, more than 1 epoxy group per molecule.

7. The halogen-free ignition resistant polymer composition of Claim 1 wherein

the modified multi-functional epoxy resin is functionally modified with more than one modifier.

8. The halogen-free ignition resistant polymer composition of Claim 1 wherein the modified multi-functional epoxy resin contains less than 15 weight percent residual epoxy groups, based on the total weight of the epoxy resin.

9. The halogen-free ignition resistant polymer composition of Claim 8 wherein the modified multi-functional epoxy resin contains less than 12 weight percent residual epoxy groups, based on the total weight of the epoxy resin.

10. The halogen-free ignition resistant polymer composition of Claim 9 wherein the modified multi-functional epoxy resin contains less than 10 weight percent residual epoxy groups, based on the total weight of the epoxy resin.

11. The halogen-free ignition resistant polymer composition of Claim 1 consisting essentially of:

A) from 40 to 94 weight percent, based on the total weight of the composition, of a thermoplastic polymer, optionally comprising 10-35 weight percent, based on the total weight of the composition, of a polyphenylene ether polymer;

B) from 1 to 30 weight percent, based on the total weight of the composition, of a modified multi-functional epoxy resin containing from 0-20 wt. percent, based on the total weight of the epoxy resin, residual epoxy groups; and

C) from 5 to 30 weight percent, based on the total weight of the composition, of a phosphorus compound such as an aryl phosphate.

12. The halogen-free ignition resistant polymer composition of Claim 11, wherein the thermoplastic polymer of A) is selected from the group consisting of: a polymers produced from a vinyl aromatic monomer or hydrogenated versions thereof, polycarbonate, acrylonitrile-butadiene-styrene/polycarbonate compositions, polyphenylene ether resin, hydroxy phenoxy ether polymers, polyethylene terephthalate, epoxy resins, ethylene vinyl alcohol copolymers, ethylene acrylic acid copolymers, polyolefin carbon monoxide interpolymers, polyolefins, cyclic olefin copolymers, olefin copolymers and homopolymers and any combination thereof.

13. The halogen-free ignition resistant polymer composition of Claim 12, wherein the thermoplastic polymer of A) is selected from the group consisting of: styrene-butadiene

block copolymers, polystyrene, high impact polystyrene, acrylonitrile-butadiene-styrene (ABS) copolymers, and styrene-acrylonitrile copolymers.

14. The halogen-free ignition resistant polymer composition of Claim 11 wherein the modified multi-functional epoxy resin is a material produced from an epoxy resin which  
5 possesses, on average more than 1 epoxy group per molecule.

15. The halogen-free ignition resistant polymer composition of Claim 11 wherein the modified multi-functional epoxy resin is a functionally modified with more than one modifier.

16. The halogen-free ignition resistant polymer composition of Claim 11 wherein  
10 the modified multi-functional epoxy resin contains less than 15 weight percent residual epoxy groups, based on the total weight of the epoxy resin.

17. The halogen-free ignition resistant polymer composition of Claim 16 wherein the modified multi-functional epoxy resin contains less than 12 weight percent residual epoxy groups, based on the total weight of the epoxy resin.

18. The halogen-free ignition resistant polymer composition of Claim 17 wherein  
15 the modified multi-functional epoxy resin contains less than 10 weight percent residual epoxy groups, based on the total weight of the epoxy resin.

19. An article produced from the halogen-free ignition resistant polymer composition of Claim 1 or Claim 18.

20